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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/683,085	11/16/2001	Richard Lee-Chee Kuo	ASTP0021USA	8052

27765 7590 06/24/2004

NAIPO (NORTH AMERICA INTERNATIONAL PATENT OFFICE)
P.O. BOX 506
MERRIFIELD, VA 22116

EXAMINER

LAM, DANIEL K

ART UNIT	PAPER NUMBER
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2667

DATE MAILED: 06/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/683,085

Applicant(s)

KUO ET AL.

Examiner

Daniel K Lam

Art Unit

2667

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 November 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-6,8,9,11-13 and 15-20 is/are rejected.
- 7) ☒ Claim(s) 3,7,10 and 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4 and 8.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. Figures 5, 6, 8a, 8b, and 9 are objected to as failing to comply with 37 CFR 1.84 because descriptive labels that are necessary for understanding the drawings, are missing.
2. Applicant is required to submit a proposed drawing correction in reply to this Office action. However, formal correction of the noted defect may be deferred until after the examiner has considered the proposed drawing correction. Failure to timely submit the proposed drawing correction will result in the abandonment of the application.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
4. **Claims 1, 2, 4-6, 8, 9, 11-13, 15, and 16** are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Pat. No. 6,473,399 issued to Johansson et al (hereinafter Johansson) in view of admitted prior art, 3GPP, MAC protocol specification, release 1999 (hereinafter 3GPP MAC specification).

Regarding **independent claims 1 and 8**, Johansson discloses a method and a wireless device with executable program for an unexpected data interruption in data transmission scheduling between a radio link control (RLC) layer and a medium access control (MAC) layer, comprising:

- A RLC transmitter (see fig. 6) sends DATA PDUs SN=0, 1, 2, and 3 to the MAC layer after receiving them from its higher layer. As a result of either lost or error, the receiver does not correctly receive the DATA PDUs SN=1 and 2. It sends a selective acknowledgement data request, SACK, to the RLC transmitter for the missing DATA PDUs. In response to the SACK data request, the RLC transmitter submits the DATA PDUs SN=1 and 2 to the MAC layer (The RLC layer submitting to the MAC layer an appropriate number of substitute protocol data units (PDUs) in place of discarded or interrupted service data unit (SDU) data in response to a data request by the MAC layer). See col. 8, lines 5-11, and lines 19-22.

Although, Johansson discloses transmitting four DATA PDUs, namely, SN=0, 1, 2, and 3 to the MAC layer, he does not disclose the unexpected data interruption occurring after RLC entity information is provided by the RLC layer to the MAC layer. But the 3GPP MAC specification discloses the entity information indicates to the MAC layer the configuration parameters that are critical to TFC selection and the amount of data that could be transmitted at the next TTI. See section 8.2.2 (i), lines 1-2.

Therefore, it would have been obvious to those having ordinary skill in the art, at the time of invention, to allow the RLC layer to send entity information to the MAC layer before submitting protocol data units to the MAC layer for a key reason. Since by using handshake mechanism provided by TFC selection, entity information, and transport formation information between the RLC and MAC layers, the RLC layer will know how many DATA PDUs to transmit and the MAC layer will know how many DATA PDUs it should receives as taught by Johansson. See col. 8, lines 30-34.

Regarding **independent claims 4 and 11**, the 3GPP MAC specification discloses a method and a wireless device with executable program for data scheduling between a radio link control (RLC) layer and a medium access control (MAC) layer, comprising:

- The 3GPP MAC specification discloses the entity information indicates to the MAC layer the configuration parameters that are critical to TFC selection and the amount of data that could be transmitted at the next TTI (the RLC layer providing RLC entity information to the MAC layer, the RLC entity information indicating that the RLC layer has service data unit (SDU) data to be transmitted). See section 8.2.2 (i), lines 1-2.

And Johansson discloses:

- After providing the RLC entity information, the RLC receives a selective acknowledgement SACK that interrupts transmission of data. The SACK requests the missing DATA PDUs to be retransmitted (the RLC layer receiving an unexpected data interruption that requires the RLC layer to discard or interrupt transmitting of the SDU data). See fig. 6, and col. 8, lines 9-10.
- After the unexpected data interruption, the MAC layer requesting for retransmission of two DATA PDUs, namely, DATA PDU SN=1 and 2 (the MAC layer requesting at least a protocol data unit (PDU) from the RLC layer in response to the RLC entity information). See col. 8, lines 19-22.
- The RLC transmitter submitting two DATA PDUs, namely, DATA PDU SN=1 and DATA PDU SN=2 to replace the missing DATA PDUs (the RLC layer submitting to the MAC layer at least a substitute PDU in response to the MAC request; wherein the

at least a substitute PDU is submitted in place of the discarded or interrupted SDU data). See fig. 6.

Regarding **independent claim 15**, Johansson discloses a method for an unexpected data interruption that is *not due to discard timer* in data transmission scheduling between a radio link control (RLC) layer and a medium access control (MAC) layer, comprising:

- A RLC transmitter (see fig. 6) sends DATA PDUs SN=0, 1, 2, and 3 to the MAC layer after receiving them from its higher layer. As a result of either lost or error, the receiver does not correctly receive the DATA PDUs SN=1 and 2. The RLC continues to send DATA PDUs SN=8 and postpone discarding until its receive a selective acknowledgement data request, SACK. In response to the SACK data request for the two missing DATA PDUs, the RLC transmitter submits the missing DATA PDUs SN=1 and 2 to its MAC layer (postponing discarding or interruption of service data unit (SDU) data in response to the unexpected data interruption until the RLC layer submits a requested number of protocol data units (PDUs) to the MAC layer). See col. 8, lines 5-11, and lines 19-22.
- The 3GPP MAC specification discloses the entity information indicates to the MAC layer the configuration parameters that are critical to TFC selection and the amount of data that could be transmitted at the next TTI (in response to a MAC request initiated by the RLC entity information). See section 8.2.2 (i), lines 1-2.

Regarding **dependent claims 2, 9 and 16**, in addition to disclose the limitations in claims 1, 8, and 15 discussed earlier, Johansson further discloses the unexpected data

interruption is due the receiver attempting to re-establishing the receive of DATA PDUs from the RLC transmitter (unexpected data interruption is due to a discard timer (except claim 16), a reset operation, a suspend operation, a stop operation, or a re-establish operation). See fig. 6 reference SACK, col. 6, lines 26-27, and col. 8, lines 9-10.

Regarding **dependent claims 5 and 12**, in addition to disclose the limitations in claims 4 and 11 discussed earlier, Johansson further discloses the MAC layers requests two DATA PDUs (SACK, LIST = 1 and 2) and the RLC provides two DATA PDUs (DATA PDU SN=1 and DATAPDU SN=2) (the number of substitute PDUs provided by the RLC layer to the MAC layer equals the number of PDUs requested by the MAC layer). See fig. 6, and col. 8, lines 9-10.

Regarding **dependent claims 6 and 13**, in addition to disclose the limitations in claims 4 and 11 discussed earlier, Johansson further discloses the unexpected data interruption is due the receiver attempting to re-establishing the receive of DATA PDUs from the RLC transmitter (unexpected data interruption is due to a discard timer, a reset operation, a suspend operation, a stop operation, or a re-establish operation). See fig. 6 reference SACK, and col. 6, lines 26-27.

5. **Claims 17-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Pat. No. 6,473,399 issued to Johansson et al (hereinafter Johansson) in view of admitted prior art, 3GPP, MAC protocol specification, release 1999 (hereinafter 3GPP MAC specification) in further view of U. S. Pub. No. 2002/0041567 issued to Yi et al (hereinafter Yi).

Regarding **independent claim 17 and dependent claim 18**, the 3GPP MAC specification discloses a method for data scheduling between a radio link control (RLC) layer and a medium access control (MAC) layer, comprising:

- The 3GPP MAC specification discloses the entity information indicates to the MAC layer the configuration parameters that are critical to TFC selection and the amount of data that could be transmitted at the next TTI (The RLC layer providing RLC entity information to the MAC layer, the RLC entity information indicating that the RLC layer has service data unit (SDU) data to be transmitted; claim 17). See section 8.2.2 (i), lines 1-2.

And Johansson discloses:

- After the unexpected data interruption, the MAC layer requesting for retransmission of two DATA PDUs, namely, DATA PDU SN=1 and 2 to replace the missing DATA PDUs (The MAC layer requesting at least a protocol data unit (PDU) from the RLC layer in response to the RLC entity information; claim 17). See col. 8, lines 19-22.
- The RLC transmitter submitting two DATA PDUs, namely, DATA PDU SN=1 and DATA PDU SN=2 (The RLC layer providing to the MAC layer at least a substitute PDU in response to the MAC request; wherein the at least a substitute PDU is submitted in place of the discarded or interrupted SDU data; claim 17). See fig. 6.

However, neither the 3GPP MAC specification nor Johansson disclose:

- After providing the RLC entity information, the RLC layer receiving an unexpected data interruption that is not due to a discard timer (claim 17).

- The RLC layer discarding SDU data not submitted to the MAC layer (claim 17). All remaining SDU data is discarded by the RLC layer after the at least one PDU is submitted to the MAC layer (claim 18).

But Yi discloses a method such that the unexpected data interrupt does not depend on a discard timer but depends on limiting the number of transmissions. See paragraph 18, lines 4-5. Furthermore, Yi discloses that if the RLC SDU failed to be transmitted successfully, it needs to be discarded. See paragraph 16, lines 1-5.

Therefore, it would have been obvious to those having ordinary skill in the art, at the time of invention, to allow the RLC layer to send entity information to the MAC layer, provide the MAC layer at least one PDU in response to the MAC request, and discard SDU data not submitted to the MAC layer after being interrupted unexpectedly by the method that depends on the limiting the number of transmissions for a key motivation. Since if a SDU failed to be transmitted successfully, it needs to be discarded in order to prevent a transmission buffer from being overloaded as taught by Yi. See paragraph 16, lines 5-6.

Regarding **dependent claim 19**, in addition to disclose the limitations in claim 17 discussed earlier, Johansson further discloses the unexpected data interruption is due the receiver attempting to re-establishing the receive of DATA PDUs from the RLC transmitter (unexpected data interruption is due to a reset operation, a suspend operation, a stop operation, or a reestablish operation). See fig. 6 reference SACK, col. 6, lines 26-27, and col. 8, lines 9-10.

Regarding **dependent claim 20**, in addition to disclose the limitations in claim 17 discussed earlier, Johansson further discloses the MAC layers requests two DATA PDUs

(SACK, LIST = 1 and 2) and the RLC provides two DATA PDUs (DATA PDU SN=1 and DATAPDU SN=2) (the number of the at least one PDU submitted by the RLC layer to the MAC layer equals the number of DATA PDUs requested by the MAC layer from the RLC layer). See fig. 6.

Allowable Subject Matter

6. **Claims 3, 7, 10, and 14** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Contact Information

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel K. Lam whose telephone number is (703) 305-8605. The examiner can normally be reached on Monday-Friday from 8:30 AM to 4:30 PM.

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on (703) 305-4378. The fax phone number for this Group is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-4700.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status

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Information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DKL: *dbl*
June 15, 2004


CHI PHAM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600 *6/15/04*